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SPECIFICATION FOR SUITCASE FOR AIR AND SUBMARINE CREW

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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SPECIFICATION FOR SUITCASE FOR AIR AND SUBMARINE CREW

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*Lt-Col R. M. Singh was Chairman for the meeting in which this standard was finalized.

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Indian Standard

SPECIFICATION FOR SUITCASE FOR AIR AND SUBMARINE CREW

0. FOREWORD

0.1 This Indian Standard was adopted by the Bureau of Indian Standards on 22 May 1987, after the draft finalized by the Travel Requisites Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council.

0.2 In the preparation of this standard, due weightage has been given to the proper type of materials to be used and prevalent trade practices being following by the manufacturers in the field.

0.3 The sizes specified in this standard would cater to the requirements of majority of users and will also be suitable for the space available in aeroplane and submarine.

0.4 While preparing this standard, assistance has been derived from specification No. IND/NAVY/TC 2064 'Specification for suitcase, air crew and submarine crew', issued by the Ministry of Defence, Government of India.

0.5 This standard contains clauses which call for agreement between the purchaser and the supplier and which permit the purchaser to use his option for selection to suit his requirements. The relevant clauses are **5.2**, **5.5**, **5.5.1** and **5.10**.

0.6 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements, methods of test and sampling for suitcase intended for use as personal kit of the air and submarine crew.

2. SHAPE AND DESIGN

2.1 The suitcase shall be rectangular shaped with round corners. It shall be provided with one handle and locking arrangement in the front with an additional multi-lever/combination lock and two inside pockets. The suitcase shall also have a partition arrangement. Normally, two elastic straps with fixing buckles or PVC adjustable straps shall be provided to hold the contents. When the partition is not fixed, then elastic straps with fixing buckles or PVC adjustable straps at the top and bottom shall be provided.

3. DIMENSIONS AND TOLERANCES

3.1 The dimensions and mass (with all attachments) and the tolerances on them shall conform to Table 1 and Fig. 1.

4. MATERIAL

4.1 The different components of the suitcase shall be made from materials specified in Table 2. Materials, not specifically designated, shall be suitable for the purpose intended.

5. MANUFACTURE, WORKMANSHIP AND FINISH

5.1 The suitcase shall be sound in construction and shall be neatly finished. The outside surface shall have texturized finish. It shall not have any sharp edge or other constructional defects. It shall be of assorted colours.

5.2 The shell shall be one-piece moulded out of the material specified in Table 2 and shall have two pairs of lugs to facilitate the suitcase to stand. When assembled, the suitcase shall stand firmly on ground without any visible rocking. The rocking, if any, shall not be more than 1·5 mm. If required by the purchaser, castor wheels may be provided.

5.3 The upper and lower shell of the suitcase shall be reinforced with aluminium alloy frame maintaining the streamline appearance and contour of the shell. The frames shall be anodized to give satin finish. The top and bottom frame sections shall have a recess all around to accommodate hinges and locks.

5.4 The suitcase shall be equipped with minimum two locks to fit on either side of the lifting handle. The locks shall be flat enough to fit into the recess of the frame and shall not protrude more than 1·5 mm above the frame. The locks shall be firmly fixed to the frame by screws or rivets.

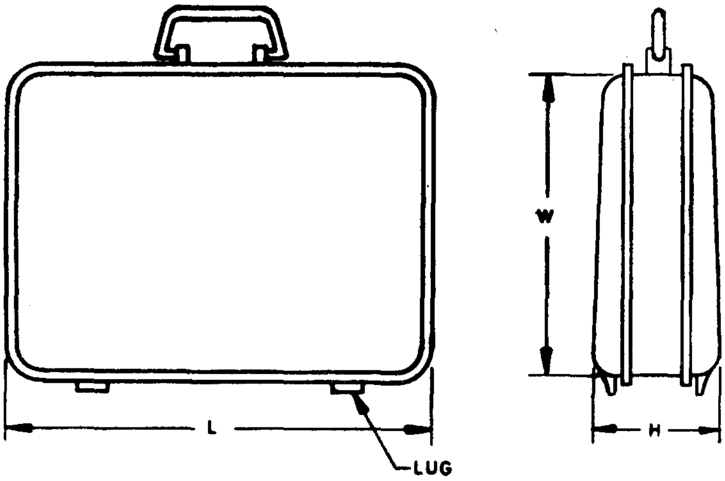

FIG. 1 SUITCASE FOR AIR AND SUBMARINE CREW

TABLE 1 DIMENSIONS OF SUITCASE FOR AIR AND SUBMARINE CREW

(*Clause* 3.1)

TYPE	LENGTH, *L* INTERNAL	WIDTH, *W* INTERNAL	HEIGHT, *H* EXTERNAL	THICKNESS, *Min*	MASS
(1)	(2)	(3)	(4)	(5)	(6)
	mm (± 25)	mm (± 20)	mm (± 20)	mm	kg (± 0·5)
Type 1	700	530	230	3·0	5
Type 2	640	420	200	2·5	4

TABLE 2 MATERIALS FOR COMPONENTS OF SUITCASE

(*Clauses* 4.1 *and* 5.2)

SL No.	COMPONENT	PREFERRED MATERIAL	REF TO IS : No.
(1)	(2)	(3)	(4)
i)	Shell	HDPE* or ABS† or PP‡ or FRP§	IS : 7328-1974‖
ii)	Reinforcing frame	Aluminium alloy	—
iii)	Pockets	Rayon satin, lining cloth or silk cloth or cotton gaberdine	IS : 2136-1974¶
iv)	Channel	Aluminium alloy or steel/ABS-plated	—
v)	Lock	Steel or brass or zinc aluminium alloy	— —
vi)	Hinges	Steel or brass	—
vii)	Rivets	Solid or semitubular	—
viii)	Sewing thread	Polyester/nylon/cotton	—

*HDPE — High density polyethylene.
†ABS — Acrylo nitrite butadiene styrene.
‡PP — Polypropylene.
§FRP — Fibre reinforced plastics.
‖Specification for high density polyethylene materials for moulding and extrusion.
¶Specification for rayon satin lining cloth (*first revision*).

5.5 The handle of the suitcase shall be made of moulded polypropylene or ABS or PVC or HDPE and shall be reinforced with steel wire or steel strip, if necessary. It shall have attractive shape and the colour may match with the colour of the shell. There shall be no crack or deformation in the handle. If required by the purchaser, soft padding at the grip of the handle may be provided.

5.5.1 Handle mounting channel shall be provided to cover the gap in the recess between the locks and also to serve as decoration. The two ends of the handle shall be secured to the handle mounting channel as agreed to between the purchaser and the supplier. It shall neither be too tight nor too loose in operation.

5.6 All visible steel components except the hinges shall be electroplated chromium over nickel with nickel as 15 microns and chromium as 0·3 microns conforming to IS : 1068-1985*. Other components including hinges shall be given a suitable protective coating. All aluminium components shall be given satin finish.

5.7 The inner side of the suitcase shall be provided with two pockets with suitable elastic tape of 10 mm width to close the pockets and two internal elastic straps of 25 mm width with fixing buckle. The elastic strap used shall have 80 to 100 percent elongation at a load of 1 kg and shall regain its original shape after the load is removed. It shall also have a partition arrangement.

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*Specification for electroplated coatings of nickel plus chromium and copper plus nickel plus chromium on iron and steel (*second revision*).

5.8 Each suitcase shall be provided with a suitable key case to accommodate two keys and a suitable identification tag.

5.9 The suitcase shall be free from visual defects like shell being deformed, twisted, tight, wavy, bulging, shade difference, scratches. cracks near the frame alround, rubbing or tool marks, frames being wavy, damaged or not matching, deformed, fitting with shell or broken lugs, plating defects, etc.

5.10 In appearance, general workmanship and finish and in all other respects not defined in this specification, the suitcase shall conform to the sample previously approved by the consumer.

6. TESTS

6.1 Performance Test — The suitcase shall be opened and closed for one hundred times with evenly distributed load of 10 kg in the lid only and there shall not be any obstruction in this process. After opening and closing for one hundred times, the suitcase in further use shall open and close smoothly.

6.2 Performance Test for Locks and Latches — The locks and latches shall be opened and closed for 2 500 times and after operating for 2 500 times, they shall not show any sign of malfunctioning.

6.3 Creep Test — The handle of the suitcase shall be tested for tendency to come out of the fitting due to creep. For this, the suitcase shall be hung under static condtions for 200 hours with a total mass of 30 kg. The handle shall not come out of its fittings.

6.4 Fatigue Test — The suitcase with a total mass of 30 kg shall be allowed to vibrate minimum 4 000 times with an amplitude of 20 mm. The handle of the suitcase shall not fail in this test.

6.5 Drop Test — The locked (with key) suitcase shall be dropped vertically from a height of 2·5 metres on normal concrete floor or on a steel plate (minimum 100 mm thick) with a maximum mass of 30 kg (inclusive of mass of the suitcase), keeping the bottom portion parallel to the ground. The shell and the frame shall not show any crack and the lock shall not open out. Further, moulded shell shall not slip from the frame.

6.6 Load Test — The suitcase shall show no damage or crack or permanent set when a load of 75 kg is kept on it for 5 seconds.

6.7 Castor Wheel Test — This test is applicable for suitcase with castor wheels. A suitcase with total mass of 30 kg shall be allowed to move on castor wheel over a distance of 2 km. At the end of the test, the wheels, the wheel mounting arrangement and the pulling device shall not show visible wear and tear and shall function as smoothly as before the test.

6.8 Impact Test — The suitcase shell shall not crack or show any damage or puncture when a spherical ball of 1·5 kg is allowed to fall from a height of one metre.

6.9 Colour Fastness Test — The suitcase shall be tested by any one of the methods covered in **6.9.1** and **6.9.2**.

6.9.1 The suitcase shall be kept in an open atmosphere so that the outside surface is exposed to bright sunlight for at least 6 hours in a day. The suitcase shall be kept in this position for a few days until the total exposure to sunlight is 48 hours. After this test, the suitcase shall be examined with reference to a referee sample. The colour of the outside surface of the suitcase shall not show any sign of decoloration.

6.9.2 A panel shall be cut from the suitcase and subjected to Xenon arc fadeometer test for 48 hours. After this test the panel shall be examined with reference to a referee sample. The colour of the outside surface of the sample piece shall not show any sign of decoloration.

7. SAMPLING

7.1 Unless otherwise agreed to between the puchaser and the supplier, the procedure given in IS : 2500 (Part 1)-1973* shall be followed for sampling. The sampling plan and the inspection level as given in **7.2** and **7.3** shall be followed.

7.2 The scale of sampling shall correspond to inspection level III given in Table 1 of IS : 2500 (Part 1)-1973* for all the requirements mentioned in this specification.

7.3 The sampling plan shall correspond to AQL plan of 4·0 percent given in Table 2 of IS : 2500 (Part 1)-1973*.

8. MARKING

8.1 Each suitcase shall be legibly marked with the following:

a) Manufacturer's name or initials or recognized trade-mark,
b) Suitcase air crew/submarine crew (as appropriate),
c) Type of the suitcase,
d) Batch number in code or otherwise, and
e) Month and year of supply (if specified by the purchaser).

8.1.1 The marking (a) and (b) may be given on the price tag and (c) to (e) may be given on the inside aluminium frame.

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*Sampling inspection tables: Part 1 Inspection by attributes and by count of defects (*first revision*).

8.1.2 Each suitcase may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

9. PACKING

9.1 Each suitcase shall be placed inside a polythene bag of suitable gauge. The open end of the polythene bag may be stapled. Two or three such bags in upright position shall then be packed in a corrugated cardboard box. The empty space shall be filled up with suitable cushioning material all around the box, if desired by the purchaser. Packing material used shall be of best trade quality.